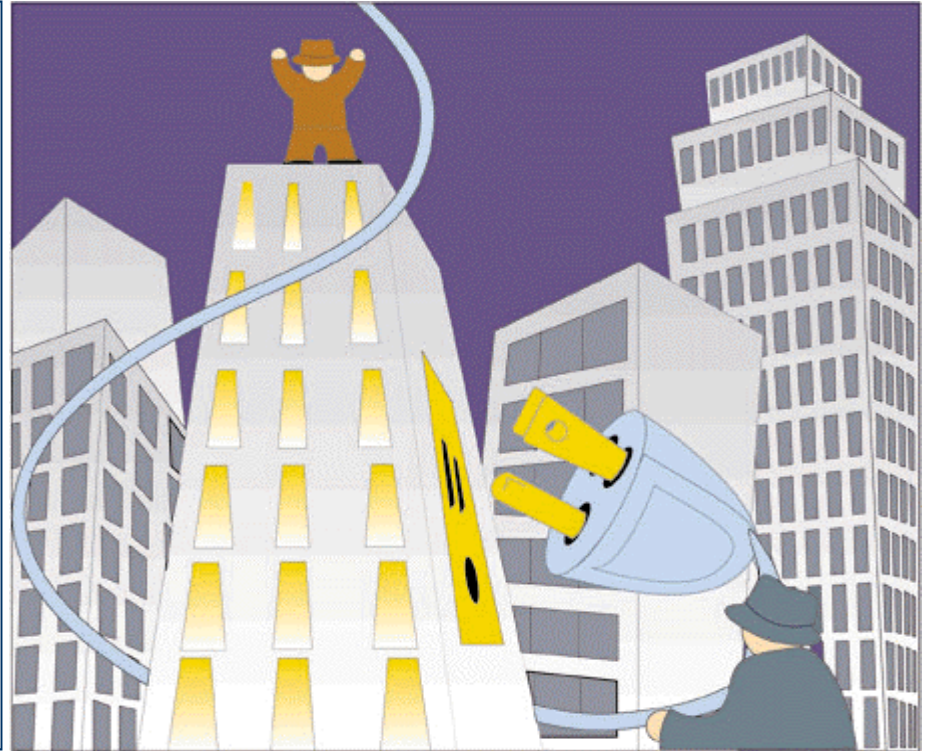


# Distribution and Interconnection R&D: Strategic Roadmap Planning

*Roadmap General Discussion,  
Conclusions, and Next Steps*

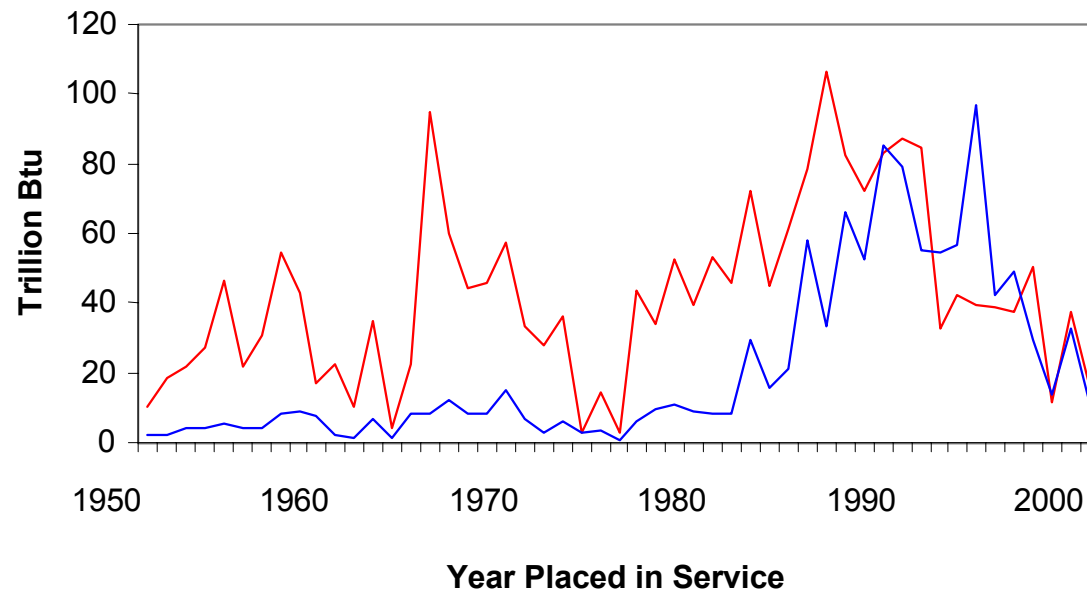


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# DER and CHP are at Watershed Point

Cogenerating DR > 1 MW



— Thermal Output — Electric Generation



# Global Themes

- Need to evolve existing \$358 billion T&D asset (250,000 substations, 152 communication protocols) to meet customer demands -- not replace infrastructure
- Systems approach works best (top-down view)
- Major overhaul of utility rate system is needed (de-averaging)
- Open access to markets is essential to get true customer choice
- Supply of trained distribution and power engineers is critical
- Technology R&D is needed to lower costs, increase reliability, and improve national security
- DER technology needs to be less custom, more mass produced
- When conducting R&D, public/private partnerships may continue to work best

# Articulate DER Vision Early On



1. Reliably serving residential or commercial loads at lowest cost
2. Integrate DER into wholesale market
3. Maximize penetration of DER (may be least legitimate goal)

Each vision will result in a different SmartConnect system, and therefore requires R&D to accomplish

# Discussions About Draft



- Meeting provided great comments on roadmap
- Changes to draft document will be made
- Draft document is mostly on track
  - Scope is distribution system of the future, of which DER is a component
  - Interoperability of devices/systems is key
  - Five major target areas make sense when categorizing proposed DOE R&D activities

# Suggested Changes

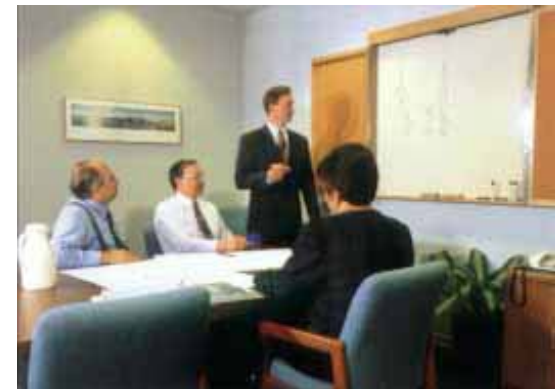


- Editorial, e.g. note other manufacturer R&D
- Shifts in perspective
  - Education is key to overcoming challenges as well as preparing for the future
  - Open protocols, open standards, open architecture, interoperability
  - DER communications is a key part of system
  - Emphasis should be on realizing full value of DER
  - Broaden stakeholder outreach, include all stakeholders in process, particularly utilities

# Strategic Roadmap for Distribution and Interconnection R&D

- We're on the right path, with many destinations along the way
- Input, input and more input
  - Great feedback from group
  - Strong message to expand input to other major stakeholders
- DOE to consider appropriate role

# Group Discussion



- Key areas for further discussion
  - Education and training
  - Open architecture
  - Standardized non-proprietary communication protocol
  - Local vs. central control systems



# Next Steps



- Please send any written notes or comments to us
- Modify draft roadmap for DOE
- We hope we can call on you for additional feedback
- [pll@rdcnet.com](mailto:pll@rdcnet.com)
- [www.eren.doe.gov/distributedpower/](http://www.eren.doe.gov/distributedpower/)

# Last Thoughts



- What one thought would you like to share with the group about the draft roadmap, the meeting, the process, or anything else?

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